

NEW SPECIES OF THE GENUS *POLYCENTROPUS* CURTIS
(TRICHOPTERA: POLYCENTROPODIDAE) FROM MEXICO

R. BARBA-ALVAREZ AND J. BUENO-SORIA

Instituto de Biología, UNAM. Apdo Postal 70-153, Mexico 04510 D. F. (e-mail: bueno@servidor.unam.mx)

Abstract.—Five new species of the genus *Polycentropus* are described and illustrated from collections made in Mexico: *Polycentropus aliciae* n. sp., *Polycentropus mixteco* n. sp., *Polycentropus ibarrai* n. sp., *Polycentropus diana* n. sp., and *Polycentropus giovanae* n. sp.

Key Words: Trichoptera, *Polycentropus*, new species, Mexico

The genus *Polycentrus* is well represented in Mexico and Central America as recorded by Holzenthal and Hamilton (1988) and Flint et al. (1999). Barba-Alvarez (1991) registered 27 species for Mexico and recently Chamorro-Lacayo (2003) described three more new species from Central America. However, because of the great dispersion of aquatic resources over a wide variety of mountains stream habitats in Mexico, it is quite probable that many more undescribed species still are present, as was pointed out by Hamilton (1986) in his revision of the New World species of *Polycentropus*. All new species described in this paper belong to the *Gertschi* group, and are placed into the various species complexes proposed by Hamilton (1986).

During the identification process we compared affinities between the new species herein described. The most important characters we used to segregate the species into species complexes are the number of spines in the endotheca of the phallus and the shape of the preanal and inferior appendages, as defined by Hamilton (1986). Terminology employed in the description of the new species follows Hamilton (1986). The material herein described will be de-

posited at the Colección Nacional de Insectos (CNIN) at the Universidad Nacional Autónoma de México and at the National Museum of Natural History, Smithsonian Institution, Washington, DC. (NMNH).

Polycentropus aliciae Barba-Alvarez and
Bueno-Soria, new species
(Fig. 1)

Diagnosis.—This species belongs in the *picana* complex proposed by Hamilton (1986) and related to *Polycentropus zanclus* Flint (1980), described from Guatemala. They are similar in the elongate shape of the inferior appendages. However, *Polycentropus aliciae* differs from *P. zanclus* by the longer, strongly dorsally curved posteroventral process of the preanal appendages, giving it a sickle-shape. In *P. zanclus* the mesoventral process is shorter, rodlike and slightly curved ventrally.

Description.—Male: Length of forewing 8 mm. Wings dark brown covered with minute gold spots; antenna, legs, and body ventrally stramineous. Male genitalia: Segment IX with anterior margin slightly oblique, posterior margin slightly produced medially. Segment X membranous. Intermediate appendages reduced to a pair of

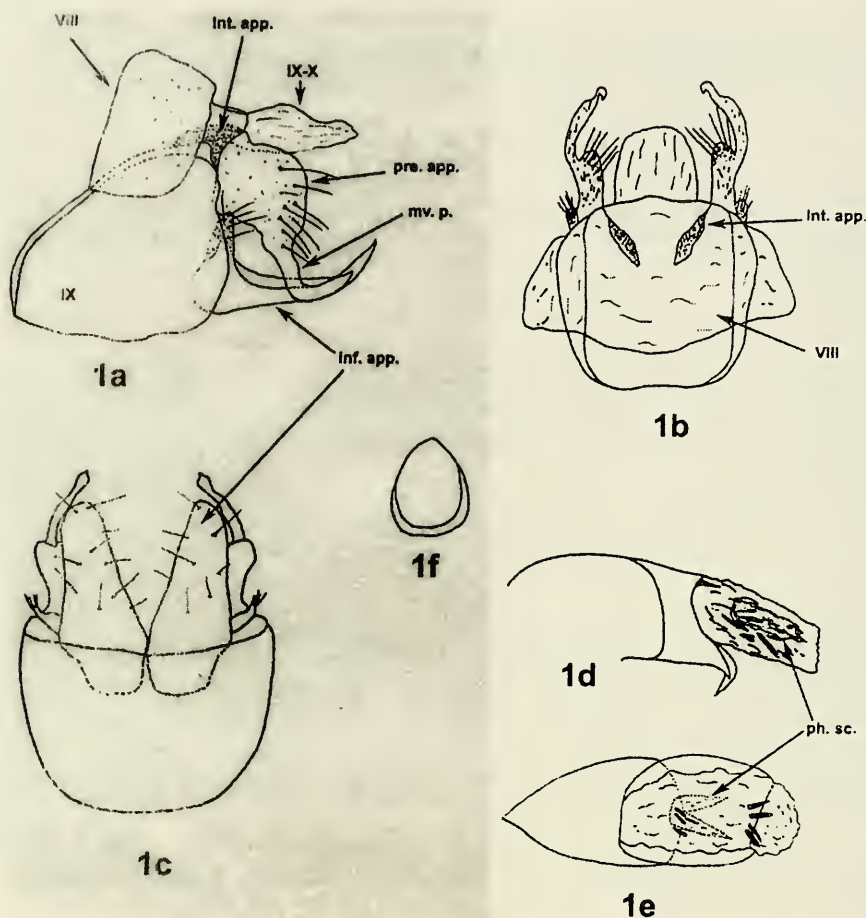


Fig. 1. *Polycentropus aliciae*, male genitalia. 1a, Lateral. 1b, Dorsal. 1c, Ventral. 1d, Phallus, lateral. 1e, dorsal. 1f, Subphallic sclerite. int. app. = intermediate appendages; inf. app. = inferior appendages; pre. app. = preanal appendages; mv. p. = mesoventral process; spi. = spines; ph. sc. = phallic sclerite.

short, rodlike structures covered with microsetae at base of preanal appendages. Preanal appendages in lateral view almost square, posterodorsally rounded; posteroventrally produced into elongate, upturned, hooklike processes; in posteroventral view apices appear slightly heliciform. Inferior appendages elongate, slightly upcurved; in lateral view with a basal thumblike lobe, narrowing apically, each with basomesal spinelike process highly sclerotized. Phallus with a group of eight small spines into a phallic membrane; in lateral view with short phallobase and apicoventral lobe strongly curved anteroventrad; in ventral

view apicoventral lobe trilobed, mesal lobe elongate; phallic sclerite long and weakly sclerotized; subphallic sclerite large and forming a complete ring around phallobase.

Female: Unknown.

Type material.—Holotype: ♂. MÉXICO: Veracruz, Río Jamapa, 5 km NE Coscoma-tepec, 29-i-1984, J. Bueno (CNIN). Paratypes: Chiapas, 25 km from Lagunas de Montebello, 2-iv-1981, C. R. Beutelspacher, 6 ♂ (CNIN), 2 ♂ (NMNH); Unión Juárez, ca. Tapachula, 22-iv-1983, elev. 1,700 m, Bueno, Barrera & Brailovsky, 3 ♂ (CNIN). Oaxaca: Portillo del Rayo, 1,540 m, 1-xii-82, A. Ibarra & M. García, 3 ♂ (CNIN).

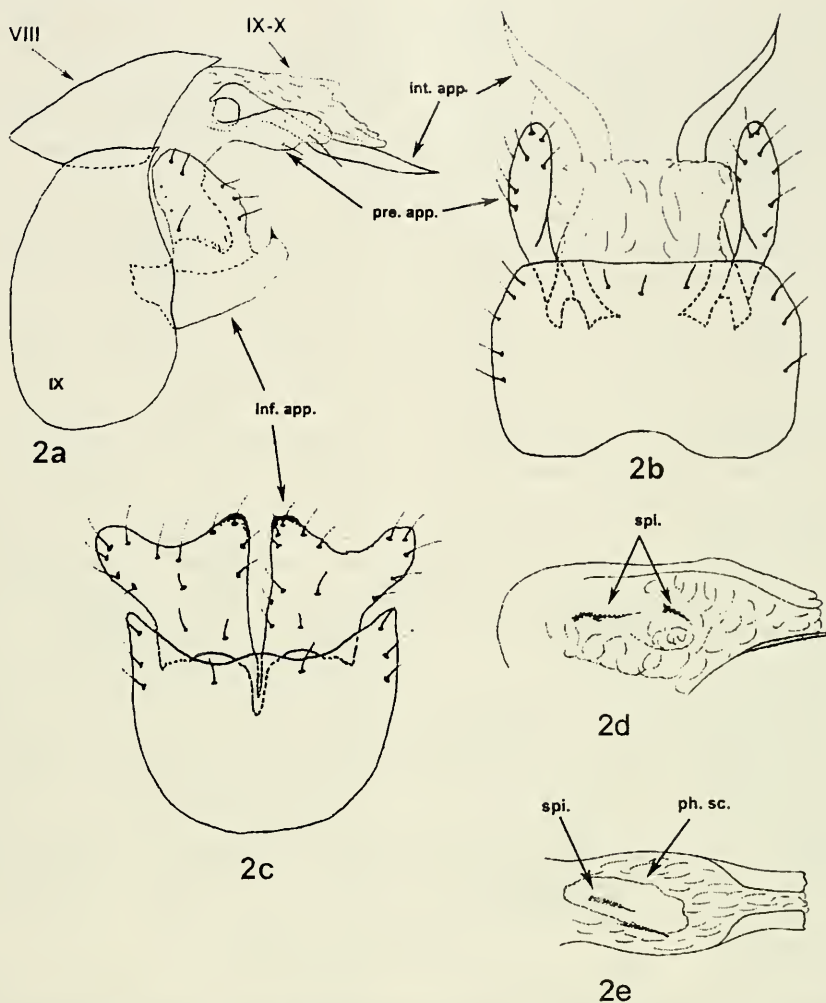


Fig. 2. *Polycentropus mixteco*, male genitalia. 2a, Lateral. 2b, Dorsal. 2c, Ventral. 2d, Phallus, lateral. 2e, Dorsal.

Etymology.—We dedicate this species to the memory of Alicia Rodríguez-Palafox, a young Mexican entomologist devoted to the study of Hymenoptera, who unfortunately recently died.

***Polycentropus mixteco* Barba-Alvarez
and Bueno-Soria, new species**
(Fig. 2)

Diagnosis.—This species is a member of the *halidus* complex by the long intermediate appendages and the presence of one pair of small spines in the phallus. *Polycentropus mixteco* resembles to *Polycentropus*

ibarrai, n. sp., by the dorsally directed lobe of the inferior appendages. *Polycentropus mixteco* can be distinguished from *P. ibarrai* by the digitate dorsal lobe of preanal appendages, the curved midbasal portion of the intermediate appendages and the square shape of the inferior appendages in ventral aspect. The former structure in ventral view appears long, narrow and with bifid apex in *P. ibarrai*.

Description.—Male: Length of forewing, 8 mm. Color dark brown; antenna, legs and body ventrally stramineous. Male genitalia: Segment IX with anterior margin

slightly curved, posterior margin slightly produced at midlength. Segment X membranous. Intermediate appendages, in lateral view, elongate, slightly sinuous, with acute apices; in dorsal view, well separated from each other, basal half curved mesad, apical half curved lateral. Preanal appendage in lateral and dorsal view, thumblike, setose and shorter than intermediate appendage; mesoventral process caudally directed, short and bluntly rounded. Inferior appendage in lateral view with a high, narrow, dorsolateral flange, rounded dorsally; dorsally-directed caudomesal point exposed in lateral aspect; in ventral aspect square, mesal margin straight, caudomesal point prominent, rounded. Phallus, in lateral view, with endothelial membrane bearing a pair of small spines; in dorsal view phallic sclerite ovate with two dark lateral spines, apicoventral process short.

Female: Unknown.

Type material.—Holotype: ♂. MÉXICO: Oaxaca, La Esperanza, route 175, ca. Valle Nacional, 18.iv.1983, A. Ibarra and M. García (CNIN).

Etymology.—The species epithet alludes to the Mixteco Indians, inhabitants of the region in the State of Oaxaca, where the type was collected.

***Polycentropus ibarrae* Barba-Alvarez
and Bueno-Soria, new species**

(Fig. 3)

Diagnosis.—This species is a member of the *halidus* complex designated by Hamilton (1986), based on the presence of only one pair of spines in the phallus. *Polycentropus ibarrae* slightly resembles *P. mixteco*, n. sp., in the digitate lobe of the inferior appendages, in lateral view. *Polycentropus ibarrae* can be distinguished from *P. mixteco* by the bilobulate mesoventral process of the preanal appendage, the straight shape of the intermediate appendage in dorsal aspect and the long, narrow, and bifid apex of the inferior appendage in ventral aspect.

Description.—Male: Length of forewing, 8 mm. Color in alcohol light brown;

antenna, legs and body ventrally stramineous. Male genitalia: Segment IX with anterior margin slightly convex, posterior margin slightly produced medially. Segment X membranous. Intermediate appendages, in lateral view elongate cylindrical, slightly curved ventrally; in dorsal view over each other. Preanal appendage, in lateral view slightly produced into a stout, lateral process almost triangular, with rounded apex; mesoventral processes bilobate, internal lobule of mesoventral processes situated laterally to phallobase; in dorsal view mesally bearing sclerotized cylindrical processes with apical setae. Inferior appendage, in lateral view, with a well-developed dorsolateral, narrow, flange, ventral surface appearing rectangular with apex truncate; in ventral view with erected mesal lobe with apex bifid. Phallus with apicoventral lip short, endotheca with a basal pair of short, parallelside, curved spines; in dorsal view phallic sclerite ovate with two dark lateral stripes; apicoventral process short.

Female: Unknown.

Type material.—Holotype: ♂: MÉXICO: Hidalgo, Hixtlahuaco, Hotel Campestre Conchita, 20°53.025'N, 98°42.140'W, el. 1,400 m, 25.xi.1998, E. Barrera and A. Ibarra (CNIN).

Etymology.—We name this species in honor of Adolfo Ibarra, collector at the Instituto de Biología, UNAM.

***Polycentropus diana* Barba-Alvarez and
Bueno-Soria, new species**

(Fig. 4)

Diagnosis.—This species is another member of the *picana* complex, similar in overall appearance to *Polycentropus aztecus* Flint 1967, particularly by the rounded shape and mesal teeth of the inferior appendages. However, *P. diana*, can be distinguished from *P. aztecus* by the preanal appendages, with the ventrally curved, posterodorsal process, the slightly elongated posterior margin of IX segment, and the presence of a pair of large basal spines in the endothelial membrane.

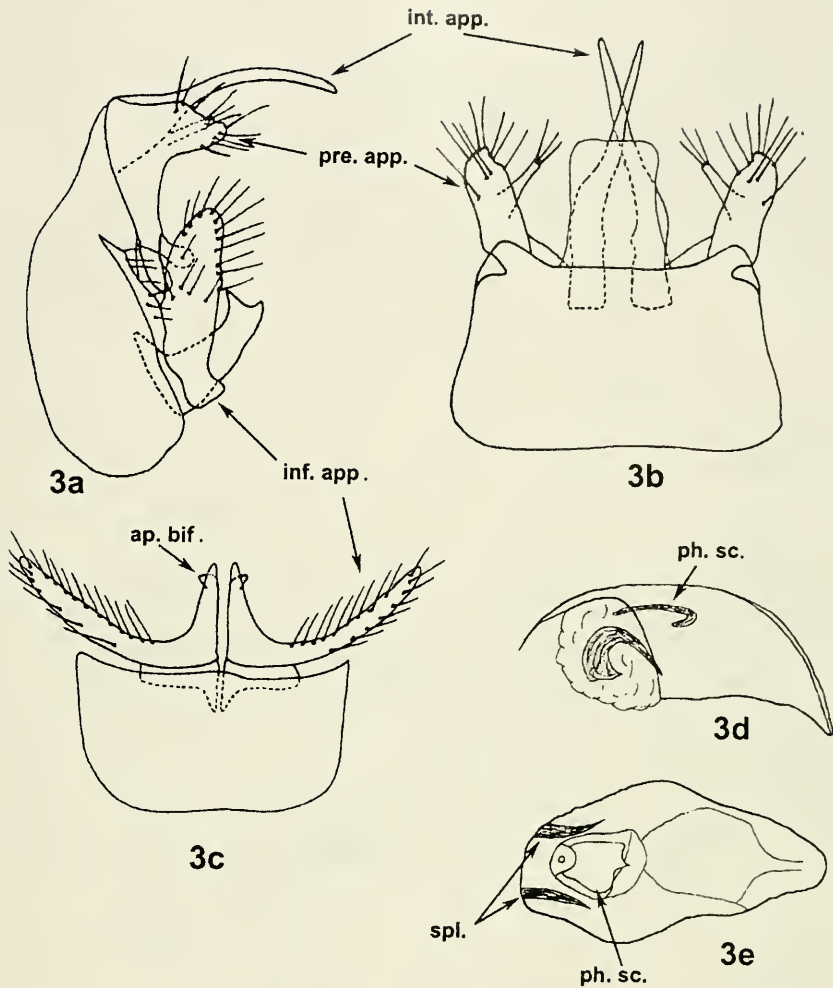


Fig. 3. *Polycentropus ibarrai*, male genitalia. 3a, Lateral. 3b, Dorsal. 3c, Ventral. 3d, Phallus, lateral. 3e, Dorsal. ap. bif. = apex bifurcated.

Description.—Male: Length of forewing 7 mm. Color dark brown, forewing with small white spots and groups of golden setae. Male genitalia: Segment IX in lateral view with anterior margin slightly rounded, posterior margin distinctly produced at mid-length. Tergum X membranous. Intermediate appendages cylindrical; in dorsal aspect thin and slightly divergent at apex; in lateral aspect slightly curved ventrad, apex with small, pale setae. Preanal appendages in lateral view svelte, with long, posterodorsal process, strongly curved ventrad with acute apex; mesoventral processes produced into

small, rounded lobe; in dorsal aspect stout, thumblike. Inferior appendage in lateral view nearly oval, dorsal margin narrow and rounded, posterior margin rounded; in ventral view ovoid, mesal margin divergent, curved, bearing toothlike process at mid-length. Phallus in lateral view, with long apicoventral process, broad basally, apically narrowed; endothelial membrane with two elongate spines basally; apically with two sets of three lateral spines; phallic sclerite, cylindrical with posterior margin indented; subphallic sclerite, a simple, slightly curved bar.

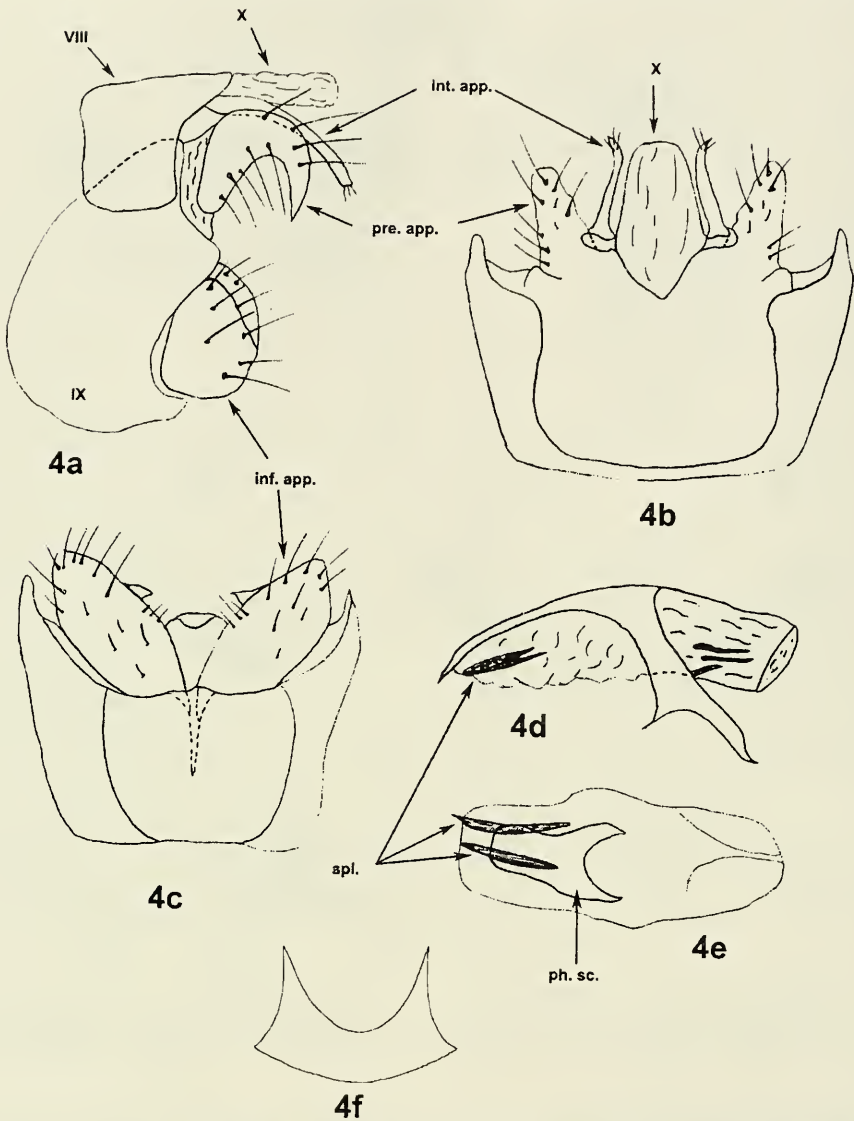


Fig. 4. *Polycentropus diana*, male genitalia. 4a, Lateral. 4b, Dorsal. 4c, Ventral. 4d, Phallus, lateral. 4e, Dorsal. 4f, Subphallic sclerite.

Female: Unknown.

Type material.—Holotype: ♂. MÉXICO: Nuevo León, Mpio. Zaragoza, El Salto, 9.xi.1995, R. Barba, 1 (CNIN). Paratypes: Nuevo León, Mpio. Zaragoza, El Salto, 9.xi.1995, R. Barba, 1 ♂ (CNIN); Mpio. Zaragoza, Plan del Cerrito, 20.iv.1995, A. Contreras, 1 ♂ (CNIN), 1 ♂ (NMNH); Mpio. Santiago, Potrero Redondo, 10.v.1985, A. Contreras, 2 ♂ (CNIN).

Etymology.—We have the pleasure of dedicating this species to Diana Fernández de Barba, wife of the senior author.

***Polycentropus giovannae* Barba-Alvarez
and Bueno-Soria, new species**

(Fig. 5)

Diagnosis.—This new species is close to *Polycentropus encera* Denning and Sykora, 1971, based on the ovoid shape of the in-

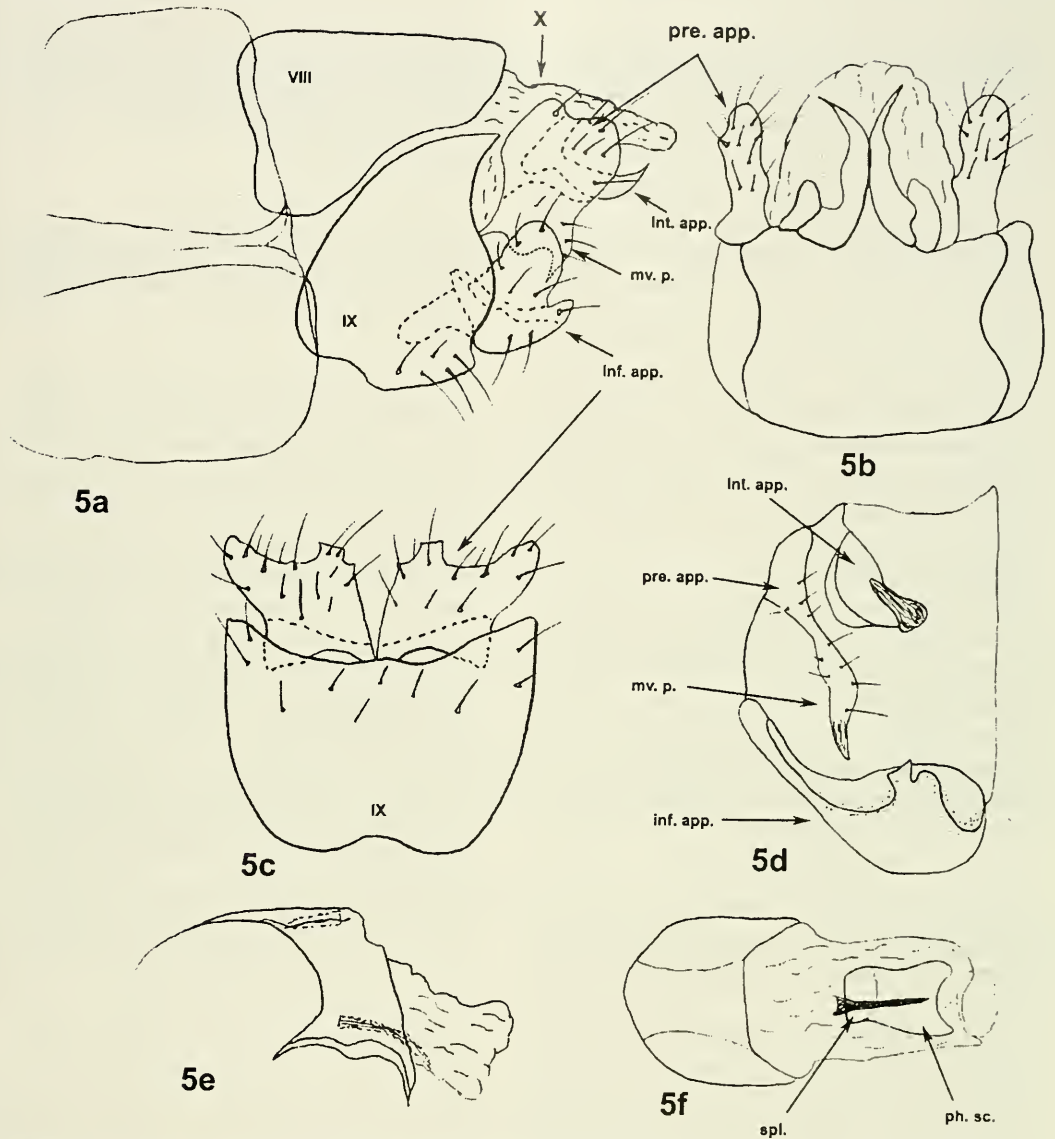


Fig. 5. *Polycentropus giovanna*, male genitalia. 5a, Lateral. 5b, Dorsal. 5c, Ventral. 5d, Posteroventral view. 5e, Phallus, lateral. 5f, Dorsal.

ferior appendages and is a member of the *bartolus* complex of the *Gertschi* group as defined by Hamilton (1986). It is slightly related to *Polycentropus encera* Denning and Sykora, 1971, by the similar ovoid shape of the inferior appendages. *Polycentropus giovanna* can be distinguished by the upturned intermediate appendages, which in *Polycentropus encera* are straight and curved ventrad, by the rectangular

shape and larger size of the preanal appendages and by the the ventromesal process which is apically acute and curved ventrad.

Description.—Male: Length of forewing, 8 mm. Color dark brown with a line of golden spots on dorsal, ventral and posterior margins of forewing. Male genitalia: Segment IX with anterior margin slightly convex, posterior margin slightly sinuate.

Tergum X membranous. Intermediate appendages, in lateral view, cylindrical with acute, upturned apex; in dorsal view, with rounded basal lobes, meeting medially, apices directed laterally. Preanal appendages, in lateral view rectangular, posterodorsally rounded, mesoventral process apically acute and curved ventrad. Inferior appendages, in lateral view, with a narrow, rounded, dorsal lobe, with mesal ridge well developed; in ventral view, with lateral digitate lobe; apico-mesal processes angulated with a short, truncate apex. Phallus, in lateral view, with apicoventral lip short, pointed, and ventrally directed with a long, slightly curved spine; phallic sclerite elongate; subphallic sclerite U-shaped.

Female: Unknown.

Type material.—Holotype: ♂: MÉXICO: Oaxaca, route 175, La Esperanza, ca Valle Nacional, 18.iv.1983, A. Ibarra and M. Garcia (CNIN).

Etymology.—We have the pleasure of dedicating this species to Giovanna Barba-Fernández, daughter of the senior author.

ACKNOWLEDGMENTS

We thank Oliver S. Flint Jr. for review and suggestions on the manuscript; Nancy Adams, Collection Manager Specialist for

her help during the stay of J. Bueno-Soria at the National Museum of Natural History, Smithsonian Institution and the anonymous reviewers for their time and effort to improve the manuscript.

LITERATURE CITED

- Barba-Alvarez, R. E. 1991. Revisión Taxonómica del Género *Polycentropus* Curtis para México (Trichoptera: Polycentropodidae). Tesis para obtener el Título de Biólogo. Facultad de Ciencias, UNAM, 98 pp.
- Chamorro-Lacayo, M. L. 2003. Seven New species of Polycentropodidae (Trichoptera) From Nicaragua and Costa Rica. Proceedings of the Entomological Society of Washington 105(2): 484–498.
- Denning D. G. 1971. A new genus and a new species of Trichoptera. The Pan-Pacific Entomologist 47: 202–210.
- Flint, O. S. Jr. 1981. Studies of Neotropical caddisflies, XXIX: The Trichoptera genus *Polycentropus* (Trichoptera: Psychomyiidae). Journal of the Washington Academy of Science 70: 148–160.
- Flint, O. S. Jr., R. W. Holzenthal, and S. C. Harris. 1999. Catalog of the Neotropical Caddisflies (Insecta: Trichoptera). Ohio Biological Survey, Columbus, Ohio, 239 pp.
- Hamilton, S. W. 1986. Systematics and Biogeography of the New World *Polycentropus* sensu stricto (Trichoptera: Polycentropodidae). Ph.D. Dissertation, Clemson University, Clemson, South Carolina, 257 pp.
- Holzenthal, R. W. and S. W. Hamilton. 1988. New species and records of Costa Rican *Polycentropus* (Trichoptera: Polycentropodidae). Journal of the New York Entomological Society 96(3): 332–334.